



**ICF International / Laboratory Data Consultants**

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**MEMORANDUM**

TO: Chris Lichens, Remedial Project Manager  
Site Cleanup Section 4, SFD-7-4

THROUGH: Rose Fong, ESAT Task Order Manager (TOM) RF  
Quality Assurance (QA) Program, MTS-3

FROM: Doug Lindelof, Data Review Task Manager [Signature]  
Region 9 Environmental Services Assistance Team (ESAT)

ESAT Contract No.: EP-W-06-041  
Technical Direction Form No.: 00105077 Amendment 3

DATE: October 8, 2007

SUBJECT: Review of Analytical Data, Tier 3

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	Omega Chem OU2
Site Account No.:	09 BC LA02
CERCLIS ID No.:	CAD042245001
Case No.:	36520
SDG No.:	MY3CJ2
Laboratory:	Bonner Analytical Testing Co. (BONNER)
Analysis:	CLP Dissolved Metals by ICP-MS and Cyanide
Samples:	20 Groundwater Samples (see Case Summary)
Collection Date:	July 9 through 13, 2007
Reviewer:	Stan Kott, ESAT/Laboratory Data Consultants

This report has been reviewed by the EPA TOM for the ESAT contract, whose signature appears above.

If there are any questions, please contact Rose Fong (QA Program/EPA) at (415) 972-3812.

**Attachment**

cc: Cynthia Gurley, CLP PO USEPA Region 4  
Steve Remaley, CLP PO USEPA Region 9

CLP PO: ☒ FYI ☐ Action

SAMPLING ISSUES: ☒ Yes ☐ No

## Data Validation Report

Case No.: 36520  
SDG No.: MY3CJ2  
Site: Omega Chem OU2  
Laboratory: Bonner Analytical Testing Co. (BONNER)  
Reviewer: Stan Kott, ESAT/LDC  
Date: October 8, 2007

### I. CASE SUMMARY

#### Sample Information

Samples: MY3CJ1 through MY3CJ5, MY3CJ7 through MY3CJ9, MY3CK0, MY3CK2 through MY3CK5, MY3CK7 through MY3CK9, MY3CL0, MY3CL1, MY3CL3, and MY3CL7  
Concentration and Matrix: Low Concentration Groundwater  
Analysis: CLP Dissolved Metals by ICP-MS and Cyanide  
SOW: ILM05.4  
Collection Date: July 9 through 13, 2007  
Sample Receipt Date: July 11 through 14, 2007  
Preparation Date: July 17, 2007  
Analysis Date: July 17 and 23, 2007

#### Field QC

Field Blanks (FB): Not Provided  
Equipment Blanks (EB): Not Provided  
Background Samples (BG): Not Provided  
Field Duplicates (D1): MY3CJ4 and MY3CJ5  
Field Duplicates (D2): MY3CK9 and MY3CL0

#### Laboratory QC

Method Blank & Associated Samples: Preparation Blank-Water (PBW) and samples listed above  
Matrix Spike: MY3CK2S  
Duplicates: MY3CK2D  
ICP Serial Dilution: MY3CK2L

Analysis: CLP Dissolved Metals by ICP-MS and Cyanide

<u>Analyte</u>	<u>Sample Preparation and Digestion Date</u>	<u>Analysis Date</u>
ICP-MS Metals	July 17, 2007	July 23, 2007
Cyanide	July 17, 2007	July 17, 2007
Percent Solids	Not Applicable	Not Applicable

#### CLP PO Action

None.

### Sampling Issues

1. The laboratory indicated that temperature indicator bottles were not provided in two sample coolers. The laboratory used a thermometer to determine the cooler temperatures to be 0.1°C and 0.6°C. Although these temperatures are outside the 4°C±2°C limit, no adverse effect on data quality is expected.
2. The laboratory indicated that the labels on the sample bottles incorrectly identified the nitric acid preservative as HNO<sub>2</sub>. The laboratory indicated that the pH was within the method limit of less than two. No adverse effect on data quality is expected.

### Additional Comments

The laboratory indicated that the MY3CJ3 metals sample was transshipped from the USEPA Region 9 laboratory. No adverse effect on data quality is expected.

All method requirements specified in the EPA Contract Laboratory Program (CLP) Inorganic Statement of Work (SOW), except as noted, have been met.

Analytical results are listed in Table 1A with qualifications. Definitions of data qualifiers used in Table 1A are listed in Table 1B.

This report was prepared in accordance with the following documents:

- Region 9 Standard Operating Procedure 906, *Guidelines for Data Review of Contract Laboratory Program Analytical Services (CLPAS) Inorganic Data Packages*;
- *USEPA Contract Laboratory Program Statement of Work For Inorganic Analysis Multi-Media, Multi-Concentration ILM05.3*, March 2004;
- *ILM05.3 to ILM05.4 Summary of Changes*, December 1, 2006; and
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, October 2004.

## II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	<u>Parameter</u>	<u>Acceptable</u>	<u>Comment</u>
1.	Data Completeness	Yes	
2.	Sample Preservation and Holding Times	Yes	
3.	Calibration	Yes	
	a. Initial		
	b. Initial and Continuing Calibration Verification		
	c. CRQL Check Standard (CRI)		
	d. ICP-MS Tuning Analysis		
4.	Blanks	No	B,C
5.	ICP Interference Check Sample (ICS)	Yes	
6.	Laboratory Control Sample (LCS)	Yes	
7.	Duplicate Sample Analysis	Yes	
8.	Matrix Spike Sample Analysis	Yes	
9.	ICP Serial Dilution Analysis	Yes	
10.	ICP-MS Internal Standards	Yes	
11.	Field Duplicate Sample Analysis	Yes	
12.	Sample Quantitation	Yes	A
13.	Overall Assessment	Yes	

N/A = Not Applicable

## III. VALIDITY AND COMMENTS

- A. Results above the method detection limit (MDL) but below the contract required quantitation limit (CRQL) (denoted with an "L" qualifier) are estimated and flagged "J" in Table 1A.

*Results above the MDL but below the CRQL are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of quantitation.*

- B. The following results are qualified as estimated high and flagged "J+" or reported non-detected "U" in Table 1A due to preparation blank contamination.

- Zinc in samples MY3CJ1, MY3CJ3, MY3CJ4, MY3CJ5, MY3CJ7, MY3CJ8, MY3CJ9, MY3CK0, MY3CK2 through MY3CK5, MY3CK7, MY3CK8, MY3CK9, MY3CL0, MY3CL1, MY3CL3, and MY3CL7

Sample results greater than the CRQL are qualified as estimated high (J+) unless the concentration of zinc in the sample exceeds 5 times the amount in any associated blank. Sample results greater than or equal to the MDL but less than or equal to the CRQL are reported as non-detected (U) at the CRQL.

The reported result of 2.4 µg/L for zinc in preparation blank sample PBW1 exceeded the 2.0 µg/L CRQL.

*A preparation blank is an analytical control that contains distilled, deionized water, or baked sand for solid matrices, and reagents, which is carried through the entire analytical procedure. The preparation blank is used to determine the level of contamination introduced by the laboratory during preparation and analysis.*

C. The following results are reported as non-detected (U) in Table 1A due to low level continuing calibration blank (CCB) contamination.

- Antimony in samples MY3CJ1, MY3CJ2, MY3CJ3, MY3CK0, MY3CK5, MY3CK7, and MY3CL1
- Arsenic in sample MY3CK2, MY3CK3, MY3CK5, MY3CK7, and MY3CK8
- Cadmium in samples MY3CJ1 through MY3CJ5, MY3CJ8, MY3CJ9, MY3CK0, MY3CK3, MY3CK4, MY3CK5, MY3CL1, MY3CL3, and MY3CL7
- Chromium in samples MY3CJ1, MY3CJ8, MY3CK2, MY3CK7, MY3CK8, MY3CK9, MY3CL0, MY3CL1, and MY3CL7
- Cobalt in samples MY3CJ7, MY3CJ8, MY3CK2, MY3CK7, and MY3CK8
- Silver in samples MY3CK5 and MY3CL3
- Thallium in samples MY3CJ1 through MY3CJ5, MY3CJ7, MY3CK0, MY3CK3, MY3CK4, MY3CK5, MY3CK7, and MY3CL0
- Vanadium in sample MY3CK0, MY3CK2, MY3CK4, MY3CK5, MY3CL1, and MY3CL7

Analyte amounts greater than the MDL but less than the CRQL were found in several blanks at the concentrations listed below.

Analyte	Run 1 Blank	Run 2 Blank	Concentration, µg/L
Antimony	CCB2	CCB1	0.88 and 0.96
Arsenic	CCB3	CCB2	0.30 and 0.36
Cadmium	CCB2	CCB2	0.029 and 0.045
Chromium	CCB2	CCB2	0.20 and 0.26
Cobalt	CCB2	CCB2	0.025 and 0.042
Silver	---	CCB2	0.018
Thallium	CCB1	CCB2	0.081 and 0.14
Vanadium	CCB3	CCB2	0.82 and 0.57

Affected sample results greater than or equal to the MDL but less than the CRQL are reported as non-detected (U) at the respective CRQL.

*A continuing calibration blank (CCB) consists of deionized, distilled water and reagents. It is analyzed after the continuing calibration verification (CCV) standard, at a frequency of every 10 samples and at the end of the analytical run to monitor analyte carry-over.*

## ANALYTICAL RESULTS

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Case No. : 36520

SDG No. : MY3CJ2

Table 1A

Site : OMEGA RECOVERY SERV.

Lab : BONNER ANALYTICAL TESTING Co. (BONNER)

Reviewer : Stan Kott, ESAT/LDC

Date : October 8, 2007

**QUALIFIED DATA**  
Concentration in ug/L

**Analysis Type :** Low Concentration Groundwater Samples  
for CLP Dissolved Metals by ICP-MS  
and Cyanide

Station Location : MY3CJ1				MY3CJ2			MY3CJ3			MY3CJ4 D1			MY3CJ5 D1			Y3CJ7		
Sample ID : MY3CJ1				MY3CJ2			MY3CJ3			MY3CJ4 D1			MY3CJ5 D1			MY3CJ7		
Collection Date : 7/9/2007				7/9/2007			7/9/2007			7/9/2007			7/9/2007			7/10/2007		
PARAMETER	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
ANTIMONY	2.0U		C	2.0U		C	2.0U		C	2.0U			2.0U			2.0U		
ARSENIC	2.5			2.6			3.2			1.7			1.9			2.2		
BARIUM	23.0			21.6			22.5			35.6			35.8			20.1		
BERYLLIUM	1.0U			1.0U			1.0U			1.0U			1.0U			1.0U		
CADMIUM	1.0U		C	1.0U		C	1.0U		C	1.0U		C	1.0U		C	1.0U		
CHROMIUM	2.0U		C	1.4L	J	A	1.6L	J	A	3.1			3.1			10.5		
COBALT	0.28L	J	A	0.26L	J	A	0.27L	J	A	0.35L	J	A	0.35L	J	A	1.0U		C
COPPER	2.7			0.45L	J	A	0.64L	J	A	0.46L	J	A	0.42L	J	A	2.0U		
LEAD	1.0U			1.0U			1.0U			1.0U			1.0U			1.0U		
MANGANESE	89.5			47.4			63.0			56.8			57.0			2.9		
NICKEL	2.2			1.1			2.1			1.8			1.8			0.43L	J	A
SELENIUM	5.2			8.5			8.9			4.5L	J	A	4.7L	J	A	4.8L	J	A
SILVER	0.028L	J	A	1.0U			1.0U			1.0U			1.0U			1.0U		
THALLIUM	1.0U		C	1.0U		C	1.0U		C	1.0U		C	1.0U		C	1.0U		C
VANADIUM	6.9			6.6			6.2			5.7			5.8			8.0		
ZINC	5.9	J+	B	42.8			7.3	J+	B	2.4	J+	B	2.9	J+	B	2.2	J+	B
CYANIDE	6.7L	J	A	10.0U			3.3L	J	A	10.0U			10.0U			10.0U		

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

MDL - Method Detection Limit

N/A - Not Applicable NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank,

TB - Trip Blank, BG - Background Sample

CRQL - Contract Required Quantitation Limit

## ANALYTICAL RESULTS

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Table 1A

Case No. : 36520

SDG No. : MY3CJ2

Site : OMEGA RECOVERY SERV.

Lab : BONNER ANALYTICAL TESTING Co. (BONNER)

Reviewer : Stan Kott, ESAT/LDC

Date : October 8, 2007

QUALIFIED DATA  
Concentration in ug/LAnalysis Type : Low Concentration Groundwater Samples  
for CLP Dissolved Metals by ICP-MS  
and Cyanide

Station Location : Y3CJ8 Sample ID : MY3CJ8 Collection Date : 7/10/2007				Y3CJ9 MY3CJ9 7/10/2007			Y3CK0 MY3CK0 7/10/2007			Y3CK2 MY3CK2 7/11/2007			Y3CK3 MY3CK3 7/11/2007			Y3CK4 MY3CK4 7/11/2007		
PARAMETER	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
ANTIMONY	2.0U			2.0U			2.0U		C	2.0U			2.0U			2.0U		
ARSENIC	3.3			2.0			1.0			1.0U		C	1.0U		C	1.1		
BARIUM	22.7			47.3			42.1			65.4			65.3			33.3		
BERYLLIUM	1.0U			1.0U			1.0U			1.0U			1.0U			1.0U		
CADMIUM	1.0U		C	1.0U		C	1.0U		C	1.0U			1.0U		C	1.0U		C
CHROMIUM	2.0U		C	10.4			28.8			2.0U		C	9.1			51.9		
COBALT	1.0U		C	0.32L	J	A	0.31L	J	A	1.0U		C	0.24L	J	A	0.33L	J	A
COPPER	0.21L	J	A	1.0L	J	A	0.42L	J	A	0.24L	J	A	0.38L	J	A	0.41L	J	A
LEAD	1.0U			1.0U			1.0U			1.0U			1.0U			1.0U		
MANGANESE	13.4			14.3			11.6			25.7			7.0			8.2		
NICKEL	0.53L	J	A	1.9			1.9			0.26L	J	A	1.2			1.8		
SELENIUM	5.4			12.5			10.2			5.0U			20.0			14.0		
SILVER	1.0U			1.0U			1.0U			1.0U			1.0U			1.0U		
THALLIUM	1.0U			1.0U			1.0U		C	1.0U			1.0U		C	1.0U		C
VANADIUM	8.2			5.4			5.0U		C	5.0U		C	6.1			5.0U		C
ZINC	7.4	J+	B	3.9	J+	B	2.0U		B	2.0U		B	3.7	J+	B	3.8	J+	B
CYANIDE	10.0U			10.0U			10.0U			10.0U			10.0U			10.0U		

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

MDL - Method Detection Limit

N/A - Not Applicable NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank,

TB - Trip Blank, BG - Background Sample

CRQL - Contract Required Quantitation Limit

## ANALYTICAL RESULTS

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Case No. : 36520

SDG No. : MY3CJ2

Table 1A

Site : OMEGA RECOVERY SERV.

Lab : BONNER ANALYTICAL TESTING Co. (BONNER)

Reviewer : Stan Kott, ESAT/LDC

Date : October 8, 2007

**QUALIFIED DATA**  
Concentration in ug/L

**Analysis Type :** Low Concentration Groundwater Samples  
for CLP Dissolved Metals by ICP-MS  
and Cyanide

Station Location : Y3CK5 Sample ID : MY3CK5 Collection Date : 7/11/2007				Y3CK7 MY3CK7 7/12/2007			Y3CK8 MY3CK8 7/12/2007			Y3CK9 MY3CK9 D2 7/12/2007			Y3CL0 MY3CL0 D2 7/12/2007			Y3CL1 MY3CL1 7/12/2007		
PARAMETER	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
ANTIMONY	2.0U		C	2.0U		C	2.0U			2.0U			2.0U			2.0U		C
ARSENIC	1.0U		C	1.0U		C	1.0U		C	2.7			2.7			1.8		
BARIUM	46.6			138			212			75.2			75.2			37.6		
BERYLLIUM	1.0U			1.0U			1.0U			1.0U			1.0U			1.0U		
CADMIUM	1.0U		C	1.0U			1.0U			1.0U			1.0U			1.0U		C
CHROMIUM	33.3			2.0U		C	2.0U		C	2.0U		C	2.0U		C	2.0U		C
COBALT	0.39L	J	A	1.0U		C	1.0U		C	0.23L	J	A	0.22L	J	A	0.56L	J	A
COPPER	0.56L	J	A	0.20L	J	A	0.33L	J	A	0.29L	J	A	0.29L	J	A	0.42L	J	A
LEAD	1.0U			1.0U			1.0U			1.0U			1.0U			1.0U		
MANGANESE	10.1			101			48.6			344			339			822		
NICKEL	2.8			0.32L	J	A	0.37L	J	A	2.2			2.0			3.0		
SELENIUM	8.6			5.0U			5.0U			5.0U			5.0U			5.0U		
SILVER	1.0U		C	1.0U			1.0U			1.0U			1.0U			1.0U		
THALLIUM	1.0U		C	1.0U		C	1.0U			1.0U			1.0U		C	1.0U		
VANADIUM	5.0U		C	5.0U			5.0U			5.0U			5.0U			5.0U		C
ZINC	2.3	J+	B	2.0U		B	3.9	J+	B	2.6	J+	B	3.7	J+	B	9.8	J+	B
CYANIDE	3.1L	J	A	10.0U			10.0U			10.0U			10.0U			10.0U		

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

MDL - Method Detection Limit

N/A - Not Applicable NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank,

TB - Trip Blank, BG - Background Sample

CRQL - Contract Required Quantitation Limit



## ANALYTICAL RESULTS

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Case No. : 36520

SDG No. : MY3CJ2

Table 1A

Site : OMEGA RECOVERY SERV.

Lab : BONNER ANALYTICAL TESTING Co. (BONNER)

Reviewer : Stan Kott, ESAT/LDC

Date : October 8, 2007

QUALIFIED DATA  
Concentration in ug/LAnalysis Type : Low Concentration Groundwater Samples  
for CLP Dissolved Metals by ICP-MS  
and Cyanide

Station Location : Y3CL3 Sample ID : MY3CL3 Collection Date : 7/13/2007				Y3CL7 MY3CL7 7/13/2007			MDL			CRQL								
PARAMETER	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
ANTIMONY	2.0U			2.0U			0.27			2.0								
ARSENIC	1.4			1.3			0.07			1.0								
BARIUM	46.8			59.6			0.1			10.0								
BERYLLIUM	1.0U			1.0U			0.032			1.0								
CADMIUM	1.0U		C	1.0U		C	0.01			1.0								
CHROMIUM	24.0			2.0U		C	0.06			2.0								
COBALT	0.25L	J	A	0.50L	J	A	0.011			1.0								
COPPER	0.53L	J	A	0.62L	J	A	0.20			2.0								
LEAD	1.0U			1.0U			0.18			1.0								
MANGANESE	26.5			594			0.055			1.0								
NICKEL	1.6			1.9			0.16			1.0								
SELENIUM	4.4L	J	A	8.3			0.27			5.0								
SILVER	1.0U		C	1.0U			0.012			1.0								
THALLIUM	1.0U			1.0U			0.012			1.0								
VANADIUM	3.3L	J	A	5.0U		C	0.44			5.0								
ZINC	4.0	J+	B	5.2	J+	B	0.34			2.0								
CYANIDE	10.0U			3.5L			3.0			10.0								

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

MDL - Method Detection Limit

N/A - Not Applicable NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank,

TB - Trip Blank, BG - Background Sample

CRQL - Contract Required Quantitation Limit

**TABLE 1B**

**DATA QUALIFIER DEFINITIONS FOR INORGANIC DATA REVIEW**

The definitions of the following qualifiers are prepared in accordance with the document *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, October 2004.

- U     The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J     The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J+    The result is an estimated quantity, but the result may be biased high.
- J-    The result is an estimated quantity, but the result may be biased low.
- R     The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
- UJ    The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.